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Readers of the REPORTER will observe that forest insect conditions in the South often change rapidly. The short life cycles of the insects and their great reproductive capacity, the warm climate, the adequacy or inadequacy of control measures, and the effects of management, drought, floods, and windstorms on the timber all contribute to extreme fluctuations in insect numbers.

During the past two months the southern pine beetle has increased sharply in Mississippi and Alabama. Numerous small infestations have developed on Federal and private lands in southwest Mississippi, and persistent control measures have been necessary on Alabama national forests. Most of the trouble has occurred in former epidemic areas, often in overstocked stands. In east Texas and Louisiana, localized outbreaks have been brought under control. Occasional single trees attacked by the southern pine beetle were found in former areas of infestation, and were removed or treated with chemicals before the beetles escaped. There have been no indications of the beetle in other Midsouth States.

Black turpentine beetles have continued to be destructive following cutting operations throughout the South. Heavy populations have developed on the Sam Houston National Forest in Texas and in flood-water and logging areas on the Kisatchie National Forest in Louisiana.

Ips bark beetles are comparatively scarce. Soaking rains in east Texas, Arkansas, and Louisiana during the early summer are believed largely responsible for a steady decline in beetle numbers.

In late June, Hurricane Audrey blew down or broke off about 425,000 cords of pine and hardwood growing stock, including some 85 million board feet of sawtimber. Damaged roots and broken branches on many of the standing trees may provide a breeding place for insects and disease for years to come.

Southern Pine Beetle Increasing in Mississippi and Alabama

During 1952-54, the southern pine beetle killed approximately 75 million board feet of pine on the Homochitto National Forest and adjoining private lands. Since then the outbreak has been controlled and the insect population kept relatively low and static. Control measures have been stopped on private lands because of the scarcity of beetle-infested trees, but a maintenance type of control has been necessary on the National Forest. Periodic operational flights are made by ranger personnel and many small timber buyers scout for infested trees, which they purchase at a reduced rate.

Since early June, the Homochitto Ranger District has reported a steady increase in beetle activity. In July, an aerial reconnaissance was made by Southern Forest Experiment Station entomologists over all of southwest Mississippi, including the counties of Jefferson, Adams, Wilkinson, Franklin, Amite, Lincoln, and Pike. There were estimated to be 140 small spots of dead and dying timber, many of which were suspected of being attacked by the southern pine beetle. Fifty-five percent of the spots were on the Homochitto National Forest, the remainder on private lands.

During the week of August 4, an aerial detection survey was made over Alabama. Early reports indicate that small groups of dead and dying pines are much more numerous than in recent years. Most of the spots are on private lands around Dadeville and Lake Martin in the east-central portion of the State. A few others are near Bellamy, in Sumter County. Ground-checking of the spots is now under way.

Southern Pine Beetle Checked in Louisiana and Texas

During March and April, scattered small infestations of the southern pine beetle were found in Louisiana. Controls were immediately put into effect and plans made for a Statewide aerial detection survey. In May, approximately 14 million acres of timberland were flown over, with flight lines spaced at 6- to 12-mile intervals. Very few single red-top trees and no groups of recently killed trees were observed. In East

Baton Rouge and East Feliciana Parishes, however, numerous small groups of dead pines, killed during the fall of 1956, were found. Ground-checking revealed that most spots had been killed by Ips beetles, the remainder by the southern pine beetle. A second flight over the two parishes in June found no recent group killing. The Louisiana Forestry Commission furnished planes and pilots for the surveys. Southern Forest Experiment Station entomologists assisted State forestry personnel in navigating and observing. Because of the present flare-up of the southern pine beetle in nearby counties in Mississippi, a third survey of the two parishes is planned for the near future.

In June an aerial pest detection survey over southeast Texas covered 7-1/2 million acres with 1,772 miles of flight lines. The major objective was to locate all groups of dying pines suspected of being attacked by the southern pine beetle. Particular attention was devoted to former epidemic areas and to the Honey Island area, where a small localized infestation had been discovered last January. Private timberland owners, the Texas Forest Service, and the Southern Forest Experiment Station cooperated in the survey, each group assuming responsibility for a specific flight area and sharing the cost.

Only seven spots of recently killed pine timber were observed, none of which proved to be caused by the southern pine beetle. There was no evidence of active infestation near Honey Island or in former epidemic areas.

Ips Engraver Beetles

Excessive numbers of leafless, deteriorating pines, killed by last year's critical drought and Ips beetle attack, occur in parts of east Texas, Oklahoma, and Arkansas, and to a lesser degree in other States. Apparently many timber owners were not equipped to salvage the dying timber or were unable to find a market for it. Several companies have reported losses ranging from 6 million to 12 million board feet, but these figures represent only a fraction of the total mortality.

Since early May abundant rain has fallen throughout most of the South. Aerial surveys during the summer in Arkansas, Texas, Louisiana, Mississippi, and Alabama have found comparatively few scattered trees infested with Ips.

During the hot, normally dry months ahead, however, a step-up in beetle activity may be expected, especially in stands where untreated slash has been left from recent logging and in the hurricane-ravaged areas of Louisiana.

The Black Turpentine Beetle

Heavy rains in early summer caused the Red River and Saline Lake in central Louisiana to back up and flood areas around the lake-shore to a depth of 10 feet or more. Loblolly pine stands on the Kisatchie National Forest and on State and private lands were under water from early May until mid-July. The irregular boundary of the flooded area makes it difficult to determine the acreage involved, but approximately 20,000 high-value pines were affected on the Kisatchie alone. Most of the trees were large, averaging 800 board feet, and had been growing well.

When the floods receded, turpentine beetles infested many of the trees, often so severely that mortality was inevitable. Most trees that had been in deep water developed exudations of resin which formed hollow pitch pustules, typically marble-size or larger, in bark crevices. This was apparently a physiological reaction and occurred on both beetle-infested and uninfested timber. Bark cut from many of the trees in the lower areas has a distinct sour, vinegar-like odor and there is considerable doubt as to whether such trees will survive.

To save as much as possible of the valuable timber and prevent further build-up and spread of the beetles to higher ground, severely infested trees were marked for salvage and the lower trunks of others were sprayed with 1 percent gamma BHC in fuel oil. Attempts are being made to encourage private timberland owners in the flooded areas to clean up the infestations on their holdings.

In other areas of the Kisatchie, black turpentine beetles have developed in stumps cut since last fall and have spread to standing timber. To date, there has been no mortality, but beetle populations are heavy and present a definite threat to the residual stand. Control is under way.

Experiences such as this point to the importance of frequent inspection following cutting operations. If the stumps appear to be supporting an unusual build-up of turpentine beetles, they should be sprayed before the beetles emerge and invade residual trees. Some timber owners routinely spray stumps and trees damaged in logging, particularly during or following dry periods on low, normally moist sites and along creek bottoms. By so doing, they have prevented appreciable damage by turpentine beetles.

Timber Damage by Hurricane Audrey

On June 27 Hurricane Audrey blew down a large volume of timber in southwest and central Louisiana. Most of the damage occurred in a belt from the Gulf through Calcasieu, Acadia, Jefferson Davis, Allen, Evangeline, and Rapides Parishes. The latter four parishes, plus La Salle, were inventoried for storm damage by Forest Survey teams of the Southern Forest Experiment Station. The Forest Survey reports that, in the area it inventoried, the volume of broken and uprooted timber is some 425,000 cords, of which about 85 million board feet is sawtimber. The total cordwood estimate includes only sound, well-formed trees at least 5 inches in diameter. The Survey also noted that hardwoods sustained far heavier damage than did pines, roughly in the proportion of 7 or 8 to 1.

Foresters are concerned about the deterioration that insects and fungi may cause before the timber can be salvaged, and also about the possibility that insects, notably Ips and black turpentine beetles, may breed in the down pines and later spread to undamaged trees.

Southern Forest Experiment Station entomologists who inspected the most heavily damaged area in mid-July found that the tops of pines broken off by the wind had faded and contained many young sawyer larvae. Very few Ips beetles were present, except where cutting had been in progress up to the time of the hurricane. Here the beetles had developed in logging slash and were spreading to the broken trees. Broken and uprooted hardwoods and pines tipped over but with roots still attached showed no evidence of fresh insect attack.

Hot, dry weather following the storm may have been partly responsible for the surprisingly small amount of insect activity. Broken tops and tipped-over trees were drying rapidly. Operators cutting poles and piling from wind-thrown pines were having difficulty in removing the tight bark. It would also appear that there were not enough beetles in the area to infest the large amount of breeding material suddenly made available to them.

A second inspection was made at the end of July. In broken tops, sawyer beetles had entered the wood and Ips beetles had increased considerably, with many broods in process of emergence. Black turpentine beetles were starting to attack the butts of broken trees, and large numbers of ambrosia beetles were observed on a few damaged pines and hardwoods (gum) on the Kisatchie National Forest. Wind-thrown pines with the roots attached were still green and free from insects.

To date, some timber owners have made good progress in salvaging the down timber, but a considerable volume still remains. Many of the standing trees are leaning, and others have broken branches or injured roots. It is difficult to predict what may develop in the months ahead.

The Red-Headed Pine Sawfly

Reports from southeast Texas, Alabama, Mississippi, and west Florida indicate that the red-headed pine sawfly has become unusually destructive in defoliating young plantation pines. Most of the damage has been spotty, however, and localized. The colorful "caterpillars" can be easily identified by their reddish-brown heads and yellow bodies speckled with leopard-like spots. They feed in groups upon the foliage, chewing the needles and leaving mere stubs along the branches. Partially defoliated trees may become stunted and poorly formed. Young southern pines can frequently endure heavy damage, but may be killed by repeated defoliations. The best control is to detect and destroy the insects by hand when they are limited to a few trees. In severe infestations, a 5-percent DDT spray or dust, applied when the larvae are feeding, is effective.

Forest Tree Diseases

So far as known, root rot has not been very important in southern pine stands. The most important root-rot fungus, Fomes annosus, which has been destructive in the West, North, and in Europe, is also native to the South. Recently this fungus was found attacking slash pine in a 20-year-old plantation in Bienville Parish, Louisiana. The attack pattern was typical of that occurring in other regions. The plantation was thinned 3 years ago. Fomes colonized the stumps left by the thinning and spread along the roots to adjacent trees. The first evidence of attack was a thinning of the crowns. Death followed suddenly the next year. In this particular plantation rot now involves about 2 of a total of 15 acres.

After the trees are girdled at the root collar by the fungus, Ips beetles and other insects attack, and death may be mistakenly ascribed to them. There is a difference between beetle and root-rot kills. In beetle attack following logging, the greatest danger is during the first season; with root rot, attack occurs the second or third year after a plantation is thinned. Root rot can be detected before beetle attack by the thinning of the crown. If, on trees with thinning crowns, the roots on the side toward a stump are uncovered they will be found to be dead. A thin white mycelial layer sometimes forms between the dead bark and the wood. At the time the tree dies, the cambium will be dead at the base but alive above.

Known control measures are too expensive for most forestry operations. Root rot is primarily a plantation disease. Until more southern pine plantations are thinned, the potentialities of root rot will not be known. The past impression has been that most pine stumps are colonized by faster growing fungi that exclude Fomes annosus. There is a possibility that most southern pine soils are too acid for best development of the root-rot fungus.

Southern Forest Insect Work Conference

Forest entomologists and others interested in forest insect problems in the South and Southeast are reminded of the Second Annual Southern Forest Insect Work Conference to be held on September 4 and 5 at the Hotel Markham in Gulfport, Mississippi.

New Publication

Forest Pest Leaflet 14, "The Red-Headed Pine Sawfly," by H. J. MacAloney, Lake States Forest Experiment Station, has been published by the U. S. Department of Agriculture, Forest Service. Copies are available at the Southern Forest Experiment Station.

